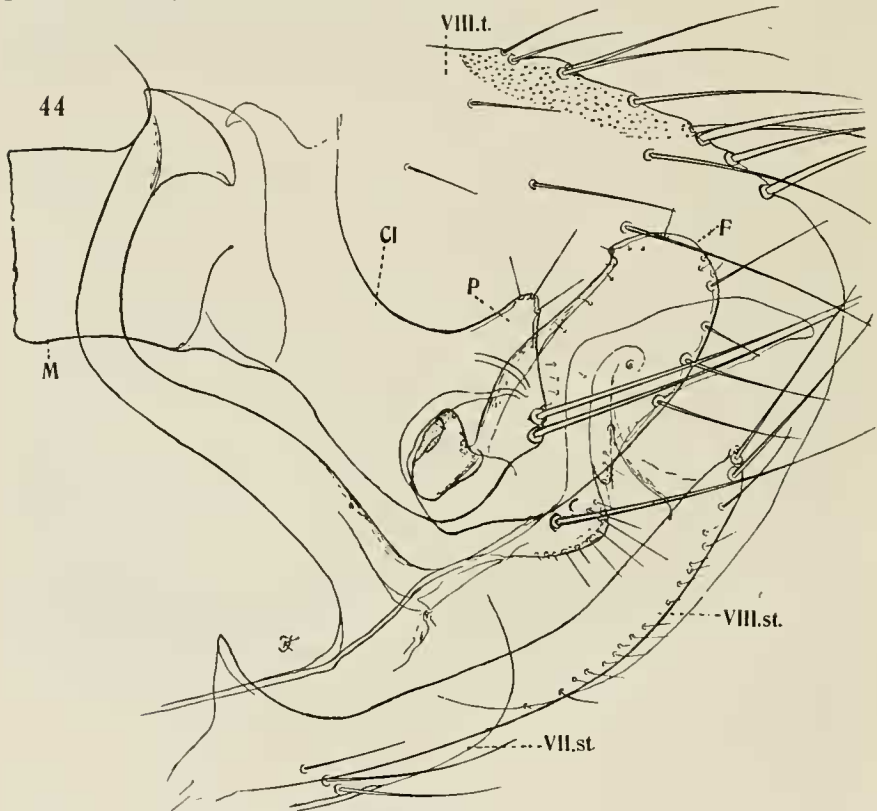


## ON SOME NORTH AMERICAN SIPHONAPTERA

By DR. KARL JORDAN, F.R.S.

(With 13 text-figures.)

THE Director of the Rocky Mountain Laboratory of the U.S. Public Health Service, Dr. R. R. Parker, and the Assistant Parasitologist of that Institute, Mr. Wm. L. Jellison, have submitted to me for identification and/or description a small number of fleas from Montana and neighbouring western states, among which are six I describe here as new. The types have been returned to Dr. Parker, but one or more paratypes, where available, have been retained. I take the opportunity to add to this paper notes on some other Nearctic fleas and to publish some figures which may prove useful.

1. *Ceratophyllus swansoni* Liu 1935 (text-fig. 44).

*Ceratophyllus swansoni* Liu, *Ann. Ent. Soc. Amer.* xxviii, p. 121, pl. I, figs. 1, 2, 3 (1935).

♂. Related to *C. vagabunda* Bohem. 1865, but differs not only in the genitalia, but also in the chaetotaxy, the bristles being more abundant, especially on the femora and tibiae. Our figure is drawn from the type, which Professor Riley has very kindly submitted to me for comparison with other bird fleas.

Proboscis short. On abdominal terga III to VI the row of small bristles placed in front of the posterior row of long ones extends down to near stigmata. On inner- and outsides of hindfemur a subbasal row of 6 or 7 bristles, on inside immediately above the row one or two additional ones; on outside of hindtibia 15 lateral bristles, not including the subventral and apical ones, on inside a row of 7. Tarsal segment V with minute hairs from apex to very near base.

Modified Segments.—Tergum VIII rounded, with 9 or 10 dorsomarginal bristles (text-fig. 44), 5 or 6 dorsolateral ones, and one long ventrolateral bristle, spiculate dorsal area of inner surface narrow. Sternum VIII (VIII. st.) without fringed apical flap, but with subapical, narrow, long, non-fringed vertical flap somewhat curved forward and then backward; at apex of VIII. st. two long bristles each side and along ventral margin from apex to near middle a row of short ones on outer side, some of them minute, and a few on inner surface. Process P of clasper short, conical, almost pointed, bay at its proximal side very wide; the two long acetabular bristles well above base of digitoid F. This finger F similar to that of *C. niger* Fox 1908, but broader. Apical lobe of sternum IX long and narrow.

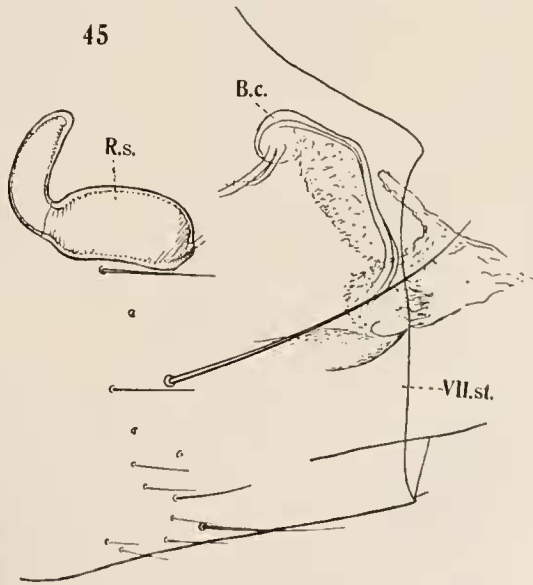
Described by Professor Liu from a ♂ and ♀ found on *Asio wilsonianus* at Fertile, Minnesota, by Mr. Swanson.

**Ceratophyllus rileyi** Liu 1935, described in the same paper from both sexes, off *Bonasa umbellus*, is the same as *C. diffinis* Jord. 1925, a species of wide distribution, being in the N. C. Rothschild collection from British Columbia, New England and Long Island.

2. **Monopsyllus fornacis**  
sp. nov. (text-fig. 45).

♀. Closely related to *M. eumolpi* Roths. 1905, apparently differing only in the shape of sternum VII and in the bursa copulatrix. This sternum is truncate, with the upper angle rounded-projecting, the ventral margin of this short nose not forming an angle with the apical margin of the segment. The bursa copulatrix and its duct of *M. eumolpi* are very peculiar, being surrounded with glandular tissue and rolled up, making two convolutions in natural situation; in the new species the duct is much shorter, not rolled up, broadly margined with glandular tissue on the anterior side, the bursa itself rounded. Spermatheca (R s.) as in *M. eumolpi*.

California: Sevenoaks, on *Sciurus griseus*, v. 1936, 2 ♀♀ (Glen M. Kohls).

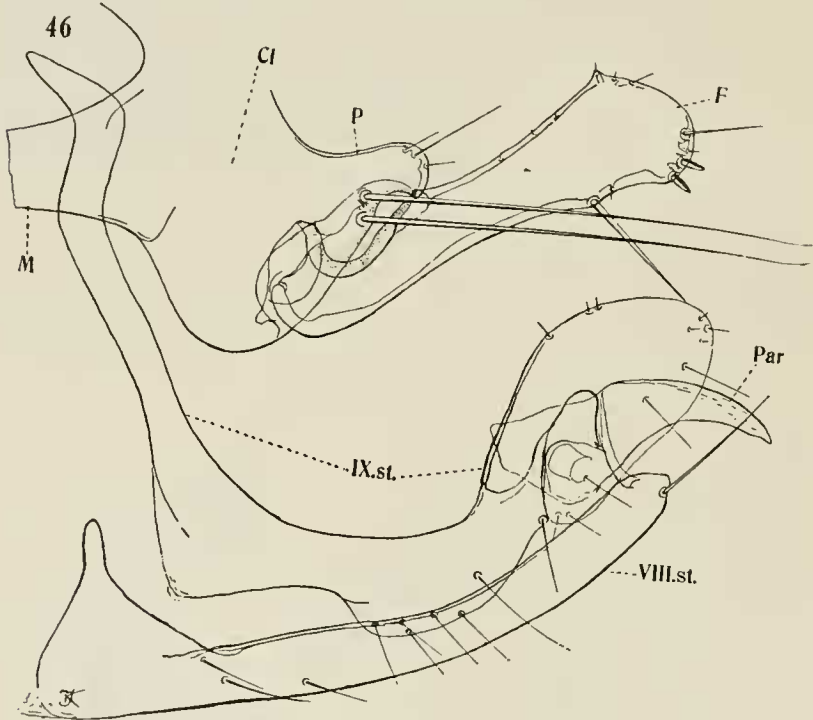


3. *Megabothris exilis* sp. nov. (text-fig. 46).

♂. Eye and stigma of abdominal segment VIII of this small species rather smaller than is usual in this genus. Similar to *M. acerbus* Jord. 1925, smaller, with fewer small bristles on abdomen, and different genitalia.

Bristles on abdominal terga : III 8 or 13, IV 8 or 9, 13 or 14, V 6, 13 or 14, VI 5 or 7, 13, VII 3 or 5, 13, in the two specimens, both sides together ; on sterna : III 2 or 4, 5 or 6, IV 2 or 4, 6, V 3, 6, VI 2, 6 or 7, VII 1 or 4, 6.

On tergum VIII, on widened area below stigma, 5 marginal and 3 or 4 lateral bristles, 1 or 2 of the latter subventral. Sternum VIII (text-fig. 46) with 1



longish bristle each side close to apex, and 3 or 4 small ones in proximal half, in paratype also a small bristle on anterior side of long one, the basal upward projection more pointed in paratype than in type. Tergum IX more strongly projecting forward than in *M. acerbus*, the sinus above manubrium therefore smaller. Process P of elasper somewhat shorter than in *M. acerbus*; the two acetabular bristles well above acetabulum (in type 3 such bristles on right side); ventral margin of elasper strongly rounded. Moveable digitoid F much longer than in *M. acerbus*, angle of anterior margin at one-third; apex rounded-dilated on posterior side, more so in type (see fig.) than in paratype, two short apical spiniforms as in *M. acerbus*, above them a slender bristle; at three-fourths of posterior margin a strong straight bristle, which is very little longer than the apex of F is broad. Vertical arm of sternum IX narrow, except ventrally, the nose of the apex long, the rounded posterior side of the apex more strongly

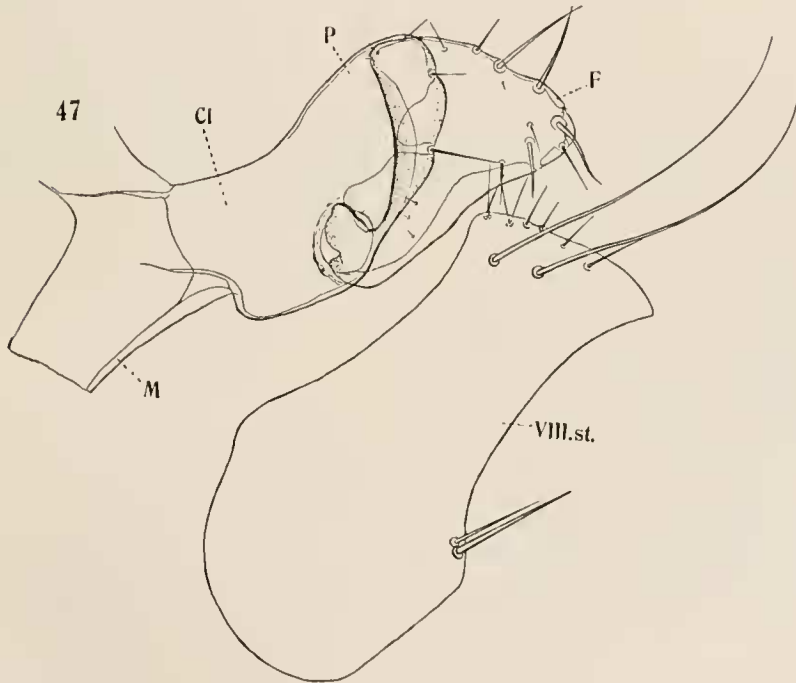
convex in paratype than in type figured; ventral arm ventrally enlarged from one-fourth, the dilatation not very prominent and gradually receding, bearing about 6 thin bristles, more or less widely separated, not bunched on a narrow prominent lobe as in *M. acerbus*; apical lobe broad, with very few slender bristles. Paramere pointed, claw-like.

Length: 2.3 mm., hindfemur 0.4 mm.

Montana: Powderville, Powder R. Co., off *Onychomys leucogaster*, 2 ♂♂ (Dr. R. R. Parker).

4. *Leptopsylla hamifer vigens* subsp. nov. (text-figs. 47, 48).

♂♀. Slightly larger than *L. h. hamifer* Roths. 1906 (Alberta); distinguished by some differences in the posterior abdominal segments of ♂. As only one ♂ of the new subspecies is known, we cannot be certain that the differences are constant. Sternum VIII (text-fig. 47, VIII. st.) ventrally in proximal half with two bristles on one side and three on the other, instead of one as in *L. h. hamifer*;



at apical margin a row of four short bristles, of which the most ventral one is submarginal; at rounded upper angle on inside two pairs; on outer surface two very long bristles, nearly as long as the median antepygidial bristle, but very much slenderer. Ventral margin of clasper (Cl) rather abruptly rounded close to manubrium instead of gradually slanting; finger (or dactyloid) F longer than apically broad, whereas in *L. h. hamifer* it is almost exactly as long as broad.

The spermatheca of *L. h. hamifer* is not known (having been destroyed in mounting the specimens—the firm of professional preparators to whom the

mounting was entrusted in the early days of N.C.R.'s entomological activities unfortunately spoiled many females by removing the spermatheca in clearing the abdomen right out). We figure here this organ of the new subspecies (text-

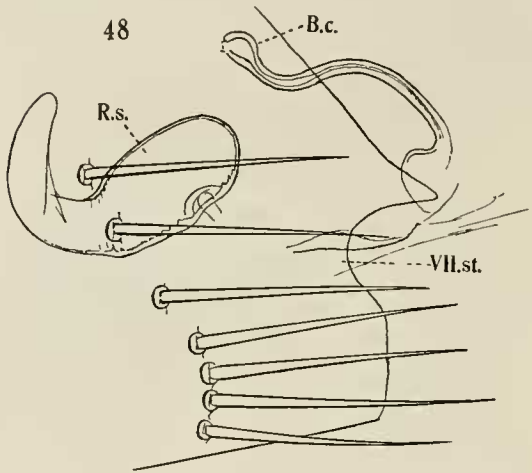


fig. 48). The stylet usually bears two lateral bristles, both ventral, but in one of the two ♀♀ of *L. h. vigens* the proximal bristle is absent from the right side stylet. Below the stigma of VIII. t. there are usually two large lateral bristles in ♀, more rarely one.

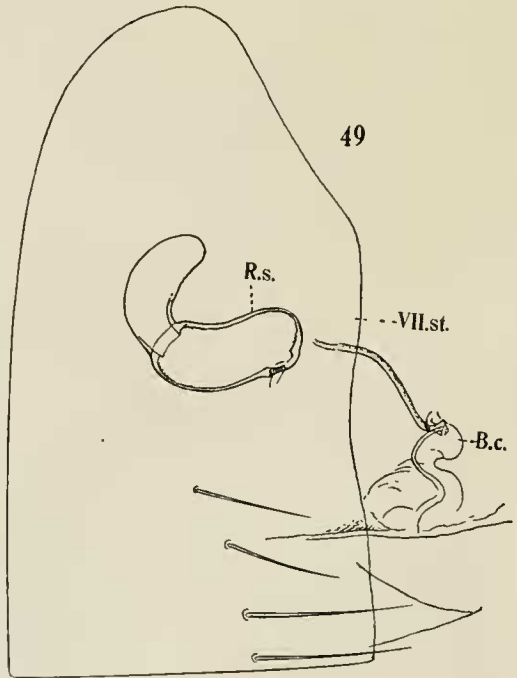
Montana: Ravalli Co., 10. xii. 1934, on *Microtus*, 1 ♂, 2 ♀♀ (Wm. L. Jellison).

#### 5. *Callistopsyllus deuterus*

sp. nov. (text-fig. 49).

♀. Agrees with the ♀ of *C. terinus* Roths. 1905, from

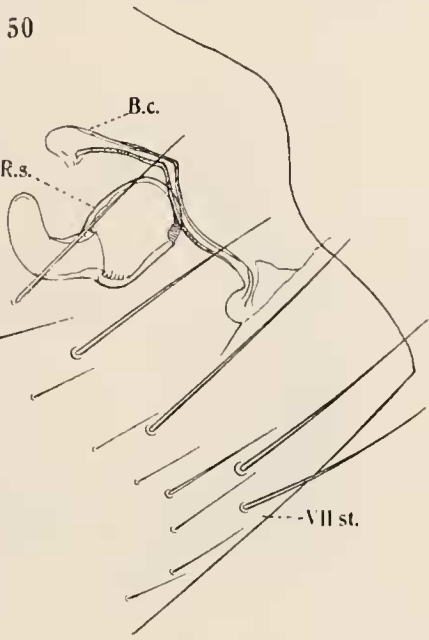
British Columbia, with the exception of the spermatheca and the dark proximal portion of its duct. Sternum VII has a straighter, slightly incurved, posterior margin, and the upper apical angle of the dilated portion of tergum VIII is less strongly rounded; but these differences may be due to the specimen of the new species being less pressed by the coverslip. Spermatheca: its head longer than tail, being a little over twice as long as broad (16:7); in our two specimens of *C. terinus* (the spermatheca of the third is lost) the head is very slightly shorter than tail, being much less than twice as long as broad (11:7). Bursa copulatrix very pale, not distinct in the specimens; its upper end with a small sclerification, as shown in text-fig. 49; the duct of the spermatheca from bursa forward also sclerified, somewhat as in typical bird *Ceratophyllus*, this dark portion being in the new species as long as hindtarsal segment V (claw excluded). In *C. terinus* one-third shorter.



California: Big Bear Lake, on *Peromyscus*, v. 1936, 1 ♀ (Glen M. Kohls).

**Delotelis** gen. nov.

♂♀. Like *Catallagia* Roths. 1915; but frons with three rows of bristles (2, 3, 7, or 1, 4, 7) and additional small bristles, some of which are placed below vestigial eye; stigma-cavity of tergum VIII narrow; hindtarsal segment V with one ventral bristle in between first lateral pair. In ♂ abdominal sternum VIII with dense apicimarginal row of bristles; process P of clasper much shorter than moveable digitoid F. In ♀ duct of bursa copulatrix short; orifice of body of spermatheca terminal, apex of tail of spermatheca obliquely truncate.—  
Genotype: *Ceratophyllus telegoni* Roths. 1905, from British Columbia.

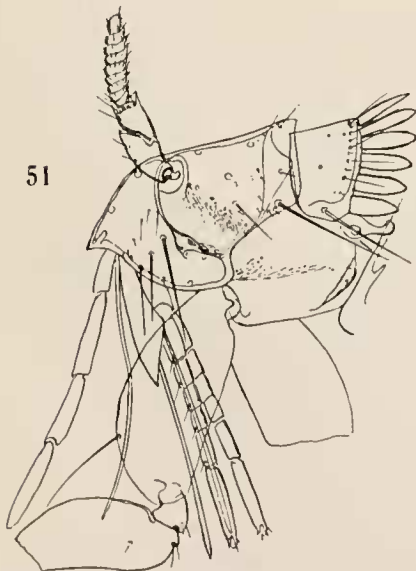


6. **Catallagia moneris** sp. nov.  
(text-fig. 50).

♀. Agrees in all details with *C. decipiens* Roths. 1915, from Alberta and British Columbia, except in the size and shape of the spermatheca. In *C. wymanni* Fox 1909, *C. charlottensis* Baker 1898 and *C. decipiens* Roths. 1915, the body of the spermatheca is broadened towards its tail

and longer than the tail, as figured in *Ectoparasites* i., p. 44, text-figs. 46, 47 (1915). In the new species it is not widened towards the tail and is not longer than this appendage; moreover, the inner tube of the tail does not project so much into the lumen of the body as in the other species. Lower antepygidial bristle two-thirds the length of middle one, as in *C. decipiens*.

Montana: Ravalli Co., v.1932, on *Marmota flaviventris*, 1 ♀.



7. **Conorhinopsylla stanfordi**

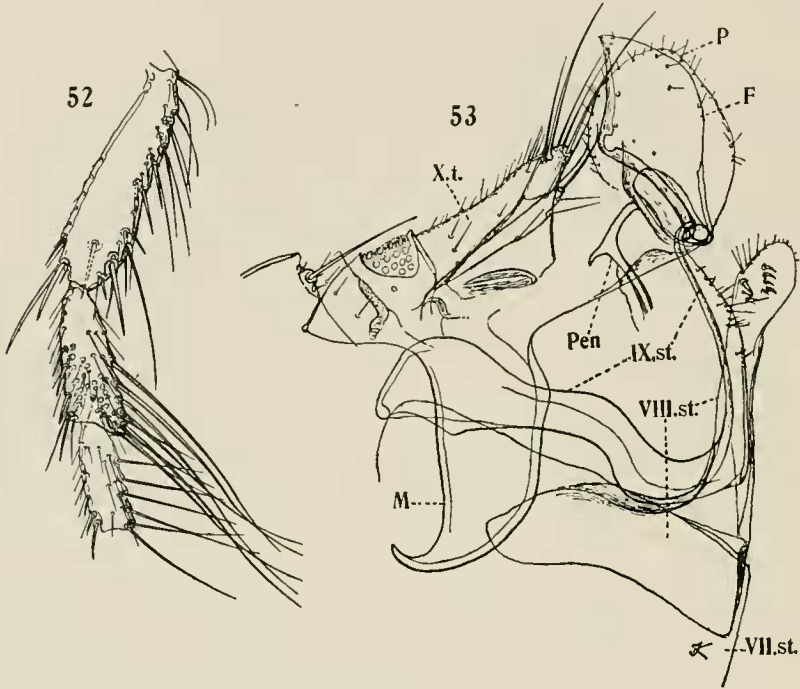
Stewart 1930 (text-figs. 51, 52, 53).

A most interesting flea. We have a single specimen, a ♂, from Highland Park, Illinois, collected by Mr. L. L. Pray in February 1926 on *Sciurus carolinensis*. I had drawn some figures before I noticed that Dr. Stewart had described

the genus and species from both sexes in *Canad. Ent.* lxii, p. 178 (1930); his specimens were found at Ithaca, N.Y., on *Sciurus hudsonius*. As my



figures give some additional detail, I publish them here. In our specimen the labial palp (text-fig. 51) consists of 6 segments, not of 5 as stated by Stewart, and the posterior angle of the genal lobe is rounded. Segments I and II of hindtarsus are hairy and bear a number of long dorsal bristles (text-fig. 52).



Before apex of penis-tube (text-fig. 53, Pen) a dorsal hook. Sternum IX has a very narrow ventral arm which tapers to a point. The genus is closely related to *Callistopsyllus* J. & R. 1915 (= *Callistopsylla*, *Ectoparasites*, Index, p. 372, 1924).

#### *Meringis* gen. nov.

The species now contained in *Phalacroscylla* Roths. 1915 fall into two natural groups which I regard as generically distinct, the main differences being as follows: In *Phalacroscylla* the rostrum reaches to apex of forecoxa, in *Meringis* at most to three-fourths; in the former the anterior abdominal terga bear apical spines, which are absent from *Meringis*; the hindcoxa of *Phalacroscylla* has, on the inner surface, a patch of small bristles and small spiniforms, and in the new genus a row of short but rather stout spiniforms; the hindtarsal segment III has only in *Meringis* a long apical bristle which reaches beyond middle of V. In the ♂ of *Meringis* sternite IX has a lateral process which is absent from *Phalacroscylla*, and in the ♀ the sensilium of tergum IX is posteriorly not convex and not sharply defined, as it is in *Phalacroscylla*.

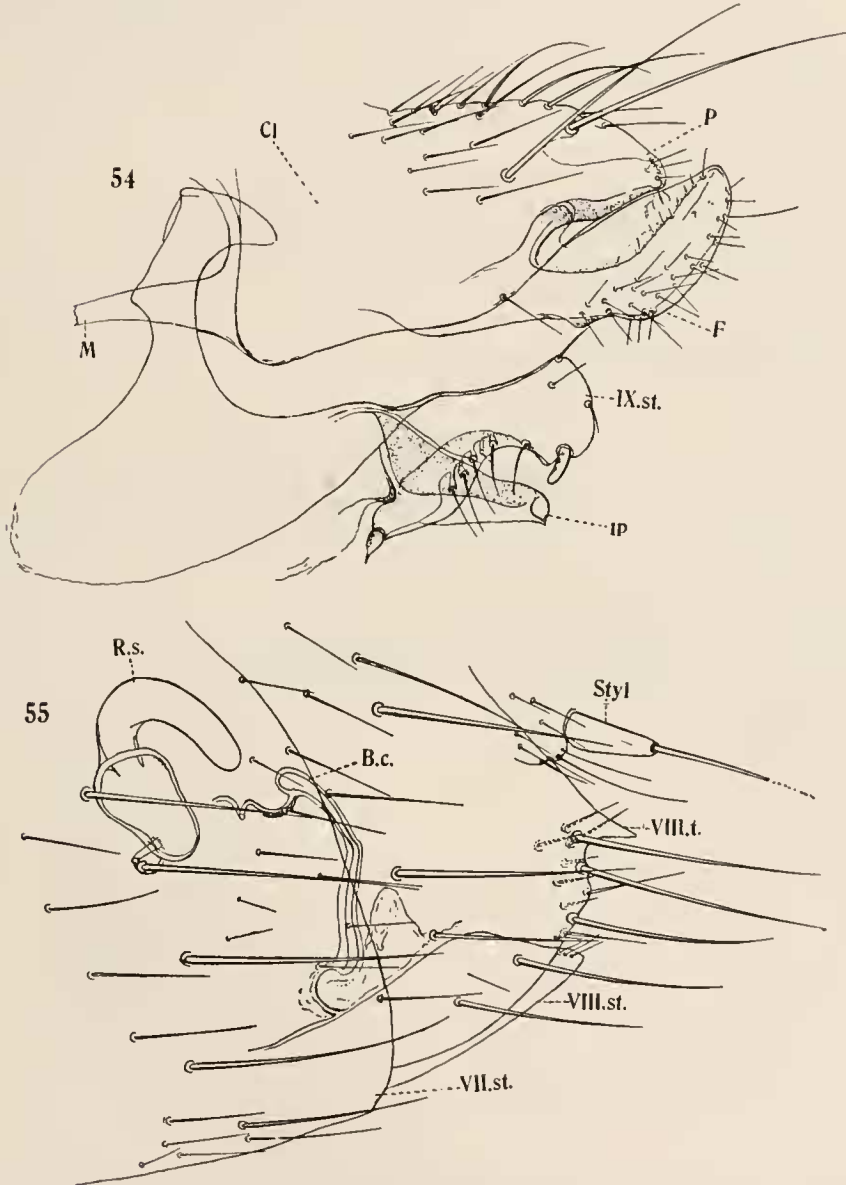
All the species of the two genera are Western Nearctic, preglacial relicts like so many Western insects. Two species are known of *Phalacroscylla*: *paradisica* Roths. 1915 from Arizona and *allos* Wagner 1936 from Utah.

To *Meringis* belong four: *cummingsi* Fox 1926 from California, *arachis*

Jordan 1929 from Arizona, *shannoni* Jordan 1929 from Washington and the new species here described.

8. *Meringis parkeri* sp. nov. (text-figs. 54, 55).

♂♀. Near *M. shannoni* Jord. 1929 from Ritzville and other places in Washington. Posterior segments different.



♂. Three antepygidial bristles as in *Phalacroscylla paradisica* Roths. 1915, there being only two in ♂♂ of *Ph. shannoni* and near allies, upper bristle less and lower one more than half the length of middle one. Process P of clasper



(text-fig. 54) and F somewhat broader, P more rounded dorsally at apex. Sternite IX nearly as in *M. shannoni*, but there are no bristles immediately behind the ventral apical spiniform; a row of five bristles along ventral margin; proximal ventral lobe as in *M. shannoni* with a bottle-shaped spiniform; lateral lobe (lp) gradually narrowed, longer than in *M. shannoni* and not dilated at apex.

♀. Stylet longer than in *M. shannoni*. Apical angle of tergum VIII produced into a sharp point (text-fig. 55), not rounded as in *M. shannoni*, the margin below this projection incurved. Spermatheca (R.s.) as in *M. shannoni*.

Montana: Powderville, Powder River Co., off *Dipodomys* sp., 4 ♂♂, 2 ♀♀ (Dr. R. R. Parker). I have much pleasure in naming this interesting flea after its discoverer.

#### *Micropsylla* Dunn & Parker 1924.

Like *Rectofrontia* Wagner & Argyropulo 1934, genotype: *Rhadinopsylla pentacanthus* Roths. 1897, but metepisternum fused with metanotum.

Genotype: *Micropsylla peromyscus* Dunn & Parker 1924, which is synonymous with *Rhadinopsylla sectilis* Jord. & Roths. 1923. The types of both names have been compared.

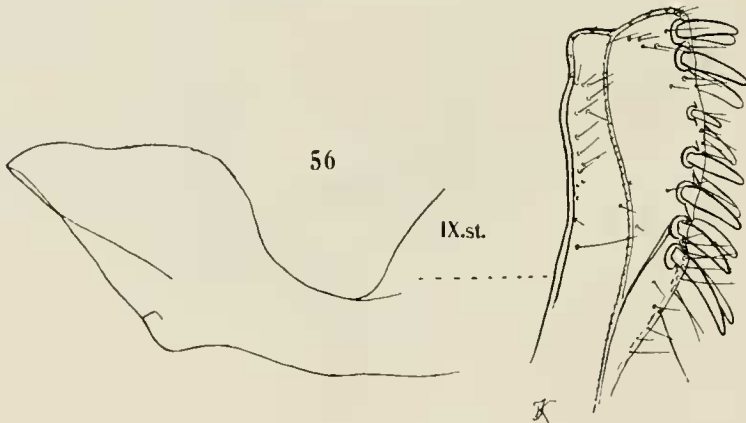
The present collection contains 2 ♂♂ from Montana: Ravalli Co., from rodent's nest, 1934 (William L. Jellison).

#### 9. *Rectofrontia fraterna* Baker 1895.

Syn.: *Neopsylla hamiltoni* Dunn & Parker, *Public Health Reports, Treasury Department*, reprint No. 883, p. 10 (1924) (Bitterroot Valley, ♀ off Packrat).

Montana: Ravalli Co., off *Citellus columbianus*, vi. 1932, 1 ♀; off *Neotoma cinerea*, x. 1934, 1 ♂; Flathead Co., iii. 1936, off *Mustela*, 1 ♀; Powderville, Powder R. Co., off *Mustela nigripes*, v. 1916, 1 ♂, 1 ♀.

Baker's specimens from S. Dakota have been compared by me. We have the species from British Columbia and Alberta in some numbers; I have also seen specimens from Saskatoon. The species varies individually in size and chaetotaxy; the genal comb contains sometimes 6 spines instead of 5.



#### 10. *Hystrichopsylla mammoth* Chapin 1921 (text-fig. 56).

The various Nearctic fleas described as distinct species of *Hystrichopsylla* Taschenb. 1880 are possibly all forms of one species, *H. gigas* Kirby 1837. But

the material we have in the collection, or I have examined in U.S.A., is insufficient for a thorough revision of the genus. I have made notes, but have to wait for more specimens, the usual complaint in systematics.

We figure here sternum IX of the type of *H. mammoth*, in U.S. Nat. Mus., Washington, D.C. The specimen is much larger than any of our specimens of *H. gigas dippiei* Roths. 1900.

Measurements of segments I and II of fore- and midtarsus :

Foretarsus in <i>H. g. dippiei</i>	♂	I 27, II 18	.	.	.	Midtarsus	I 48, II 28
"	"	"	"	♀	I 34, II 22	"	I 60, II 33
"	"	<i>H. mammoth</i>	♂	I 47, II 32	.	"	I 76, II 47
"	"	"	♀	I 50, II 32	.	"	I 82, II 48

The measurements of *H. g. dippiei* are those of our largest mounted specimens.

